Upgrading the FRE-2 Processor Module

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Bay Networks

Bay Networks

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Meets requirements of:

FCC Part 15, Class A
EN 55 022 (CISPR 22:1985), Class A <and Class B>
VCCI Class 1 ITE

Canada Requirements Only

Canada CS-03 Rules and Regulations

Note: The Canadian Department of Communications label identifies certified equipment. The certification means that the equipment meets certain telecommunications network protective operations and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent the degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Canada CS-03 -- Règles et règlements

Note: L’étiquette du ministère des Communications du Canada indique que l’appareillage est certifié, c’est-à-dire qu’il respecte certaines exigences de sécurité et de fonctionnement visant les réseaux de télécommunications. Le ministère ne garantit pas que l’appareillage fonctionnera à la satisfaction de l’utilisateur.

Avant d’installer l’appareillage, s’assurer qu’il peut être branché aux installations du service de télécommunications local. L’appareillage doit aussi être raccordé selon des méthodes acceptées. Dans certains cas, le câblage interne du service de télécommunications utilisé pour une ligne individuelle peut être allongé au moyen d’un connecteur certifié (prolongateur téléphonique). Le client doit toutefois prendre note qu’une telle installation n’assure pas un service parfait en tout temps.

Les réparations de l’appareillage certifié devraient être confiées à un service d’entretien canadien désigné par le fournisseur. En cas de réparation ou de modification effectuées par l’utilisateur ou de mauvais fonctionnement de l’appareillage, le service de télécommunications peut demander le débranchment de l’appareillage.

Pour leur propre sécurité, les utilisateurs devraient s’assurer que les mises à la terre des lignes de distribution d’électricité, des lignes téléphoniques et de la tuyauterie métallique interne sont raccordées ensemble. Cette mesure de sécurité est particulièrement importante en milieu rural.

Attention: Les utilisateurs ne doivent pas procéder à ces raccordements eux-mêmes mais doivent plutôt faire appel aux pouvoirs de réglementation en cause ou à un électricien, selon le cas.

Canada Requirements Only *(continued)*

D. O. C. Explanatory Notes: Equipment Attachment Limitations

The Canadian Department of Communications label identifies certified equipment. This certification meets certain telecommunication network protective, operational and safety requirements. The department does not guarantee the equipment will operate to the users satisfaction.

Before installing the equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above condition may not prevent degradation of service in some situations.

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Notes explicatives du ministère des Communications: limites visant les accessoires

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Canada Requirements Only *(continued)*

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About This Guide

If you are responsible for configuring and managing Bay Networks® routers, you need to read this guide. This guide provides instructions for upgrading the FRE-2 processor module.

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To ensure comprehensive network support to our customers and partners worldwide, Bay Networks Customer Service has Technical Response Centers in key locations around the globe:

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- Tokyo, Japan
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Region	Telephone Number	Fax Number
United States and Canada	1-800-2LANWAN; enter Express Routing Code (ERC) 290 when prompted (508) 436-8880 (direct)	(508) 670-8766
Europe	(33) 92-968-300	(33) 92-968-301
Asia/Pacific Region	(612) 9927-8800	(612) 9927-8811
Latin America	(407) 997-1713	(407) 997-1714

In addition, you can receive information on support programs from your local Bay Networks field sales office, or purchase Bay Networks support directly from your authorized partner.

Bay Networks Information Services

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World Wide Web

The Bay Networks Customer Support Web Server offers a diverse library of technical documents, software agents, and other important technical information to Bay Networks customers and partners.

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- View a listing of support cases and determine the current status of any open case. Case history data includes severity designation, and telephone, e-mail, or other logs associated with the case.
- Customize the listing of cases according to a variety of criteria, including date, severity, status, and case ID.
- Log notes to existing open cases.
- Create new cases for rapid, efficient handling of noncritical network situations.
- Communicate directly via e-mail with the specific technical resources assigned to your case.

The Bay Networks URL is *http://www.baynetworks.com*. Customer Service is a menu item on that home page.

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The Support Source CD contains extracts from our problem-tracking database; information from the Bay Networks Forum on CompuServe; comprehensive technical documentation, such as Customer Support Bulletins, Release Notes, software patches and fixes; and complete information on all Bay Networks Service programs.

You can run a single version on Macintosh Windows 3.1, Windows 95, Windows NT, DOS, or UNIX computing platforms. A Web links feature enables you to go directly from the CD to various Bay Networks Web pages.

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We recommend the use of CompuServe Information Manager software to access these Bay Networks Information Services resources. To open an account and receive a local dial-up number in the United States, call CompuServe at 1-800-524-3388. Outside of the United States, call 1-614-529-1349, or your nearest CompuServe office. Ask for Representative No. 591. When you're on line with your CompuServe account, you can reach us with the command **GO BAYNET**.

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To use InfoFACTS in the United States or Canada, call toll-free 1-800-786-3228. Outside of North America, toll calls can be made to 1-408-764-1002. In Europe, toll-free numbers are also available for contacting both InfoFACTS and CompuServe. Please check our Web page for the listing in your country.

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Technical Response Center	Telephone Number	Fax Number
Billerica, MA	1-800-2LANWAN	(508) 670-8765
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Sydney, Australia	(612) 9927-8800	(612) 9927-8811
Tokyo, Japan	(81) 3-5402-0180	(81) 3-5402-0173

Upgrading the FRE-2 Processor Module

This document describes how to upgrade the Fast Routing Engine-2 (FRE®-2) processor module memory.

FRE-2 Processor Module Upgrade Procedure

To upgrade a FRE-2 processor module:

1. Remove the router's front bezel.
2. Attach the antistatic wrist strap to your wrist.
3. Remove the router's electromagnetic compatibility (EMC) shield.
4. Remove the FRE-2 processor module you want to upgrade.
5. Upgrade the FRE-2 processor module.
6. Reinstall the FRE-2 processor module.
7. Reassemble the router.

Depending on your router model, you will need a Phillips or standard screwdriver to replace hardware components.

Removing the Front Bezel

To upgrade the FRE-2 processor module, you must first remove it from the router. You begin by removing the router's front bezel (front panel) as follows:

1. **Using both hands, pull the bottom of the front bezel forward to remove it from the router (Figure 1).**
2. **Remove the bezel from the chassis.**

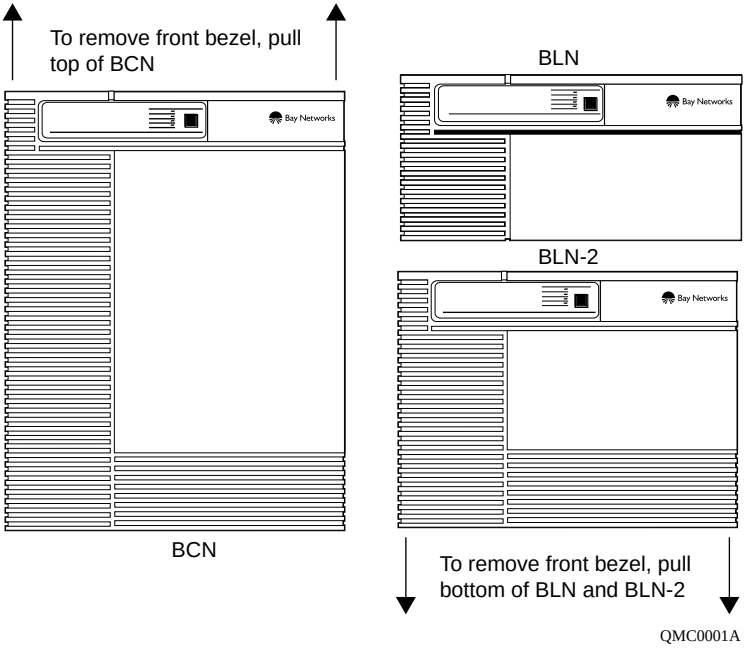

Figure 1. Removing the Front Bezel

Attaching the Antistatic Wrist Strap

We ship an antistatic wrist strap with each user-serviceable router. You must wear the antistatic wrist strap to direct the discharge of static electricity from your body to the chassis of the Bay Networks router, thereby avoiding discharge to sensitive electronic components.

Caution: Electrostatic discharge can damage hardware. You must wear the antistatic wrist strap to protect your equipment from damage whenever you remove, install, configure, or handle FRE modules.

To attach the antistatic wrist strap:

1. **Locate the wrist strap on the inside of the front bezel.**
2. **Remove the strap and cable with jack from the back of the front bezel.**
3. **Verify that the cable is attached to the wrist strap.**

4. **Insert your hand inside the wrist strap.**

   Adjust the strap to ensure that the metal buckle inside the strap is in contact with your skin.

5. **Insert the jack into the antistatic receptacle (Figure 2).**

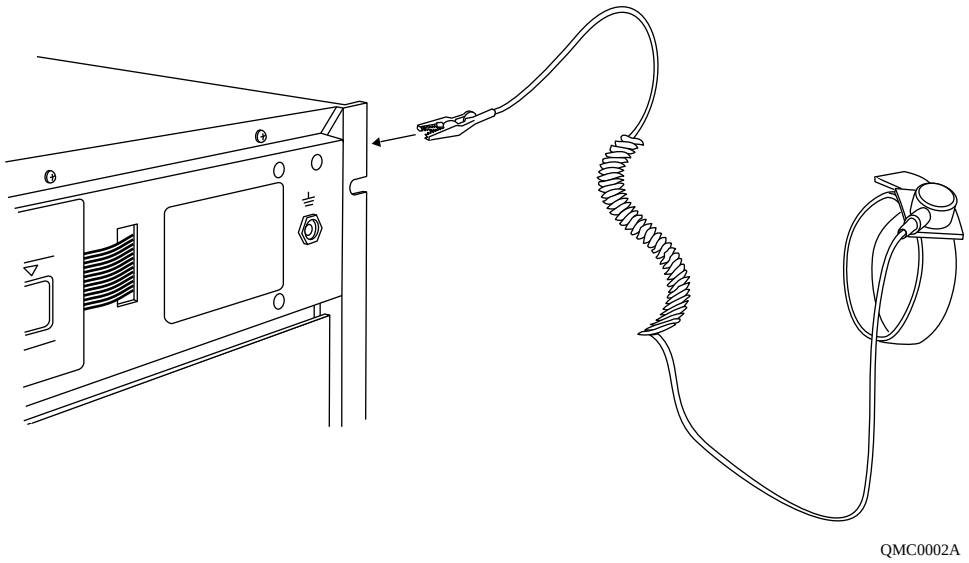

Figure 2. Connecting the Wrist Strap Jack to the Antistatic Receptacle

Removing the EMC Shield

To access the FRE-2 processor module, first remove the EMC shield, as follows:

1. **Loosen the captive thumbscrews that fasten the EMC shield to the chassis (Figure 3, Figure 4, or Figure 5, depending on your router model).**
2. **Remove the EMC shield from the chassis.**

Caution: Do not operate a Bay Networks router with the EMC shield removed for more than 5 minutes because the router may overheat. Also, the BCN router has temperature sensors that may not detect an overheating condition when the shield is removed.

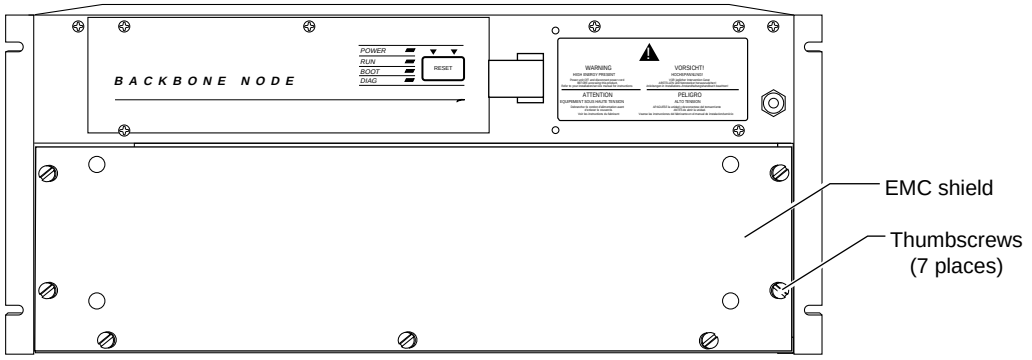

Figure 3. EMC Shield on BLN Router

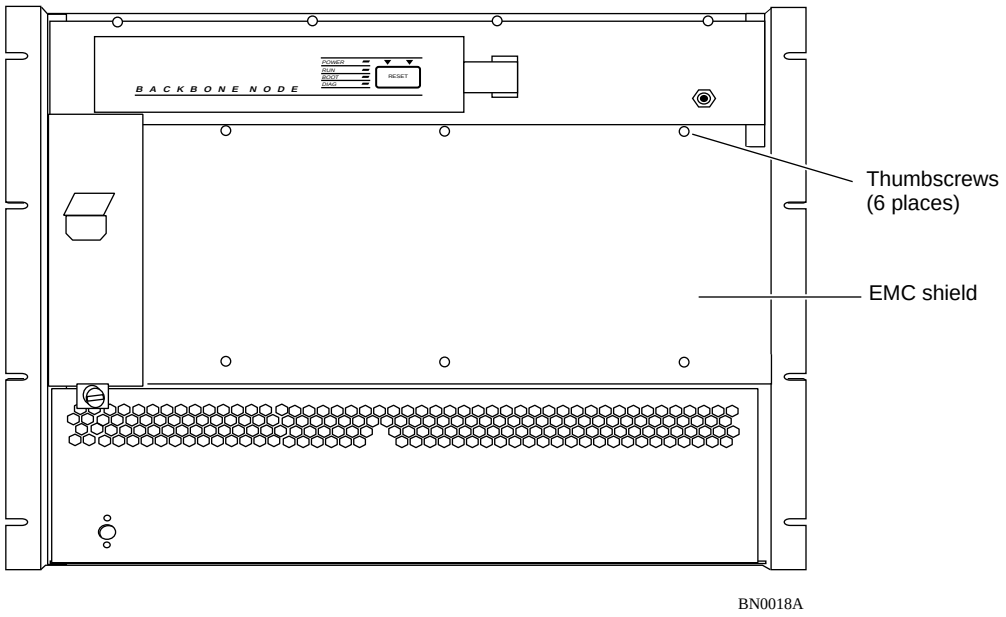

Figure 4. EMC Shield on BLN-2 Router

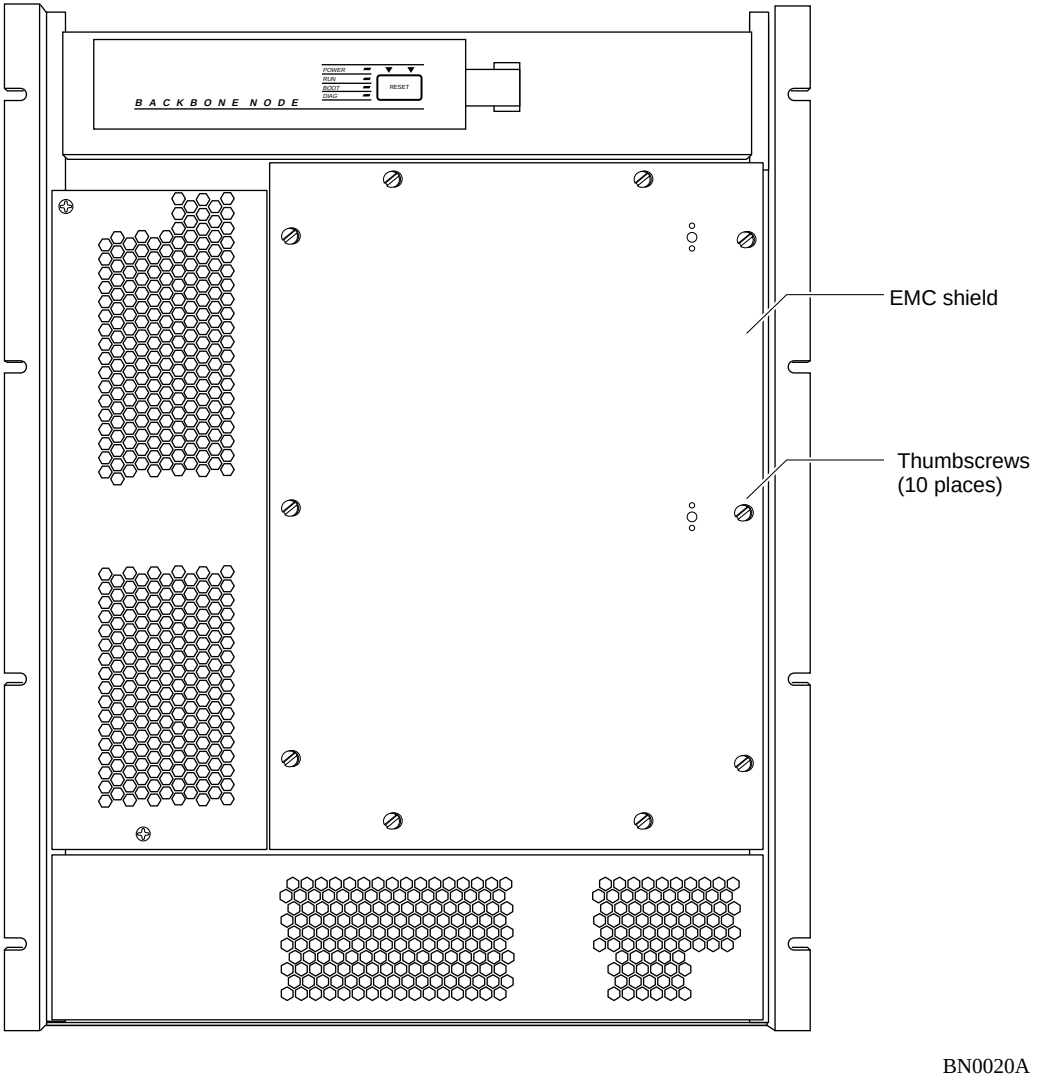

Figure 5. EMC Shield on BCN Router

Removing the FRE-2 Processor Module

To remove the FRE-2 processor module from the router:

Danger: A potential energy hazard exists during power-on (hot-swap) service of FRE-2 modules. Do not remove more than two adjacent boards/brackets without turning off the unit and removing the power cord.

1. **Remove the board retainer bracket (if the router is a BCN® go to Step 2).**

   A single screw fastens the bottom of the board retainer bracket to the chassis (Figure 6). Remove the screw and then the board retainer bracket.

2. **Gently pull the board extractors at the end of the module toward you.**

   The extractors swing open, pushing the module out until you can remove it.

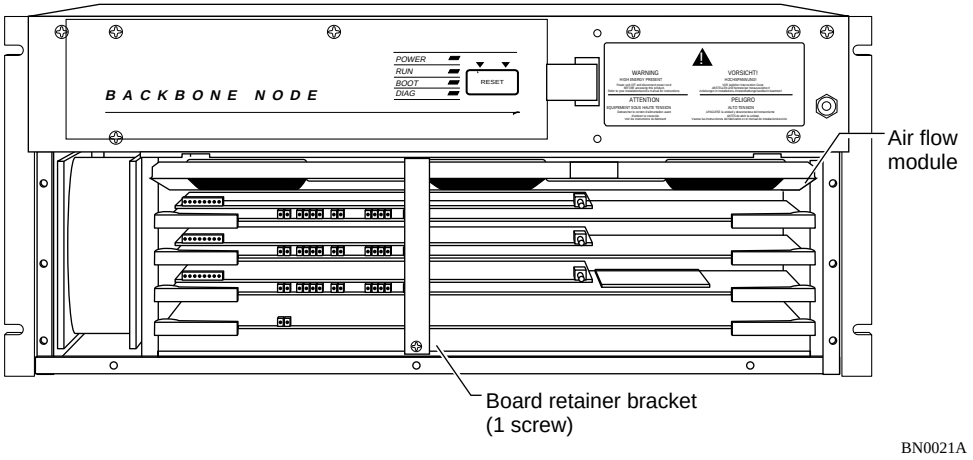

Figure 6. Rear View of a BLN Router

3. **Locate the part number label affixed to one of the board extractors.**
4. **Refer to Table 1 to determine whether you have a FRE-2 or FRE-2/060 processor module.**

Table 1. Identifying the FRE-2 Processor Module

Part Number	Processor Module
106450-xx	FRE-2
111316-xx	FRE-2
109372-xx	FRE-2/060

Note: xx indicates memory size.

Upgrading the FRE-2 Processor Module

Figure 7 shows the location of the *single inline memory module* (SIMM) sockets on a FRE-2 processor module. The module shown in Figure 7 is configured with 8 MB of DRAM. For this configuration, sockets SI 3, SI 4, and U85 are populated with SIMMs. Sockets SI 1 and SI 2 are empty.

Use Figure 7 as a reference when you upgrade your FRE-2 processor module.

Depending on which upgrade kit you ordered, proceed to one of the following sections:

- "Upgrading from 8 MB to 16 MB"
- "Upgrading from 8 MB or 16 MB to 32 MB"
- "Upgrading from 16 MB to 64 MB (FRE-2/060 Only)"
- "Upgrading from 32 MB to 64 MB (FRE-2/060 Only)"

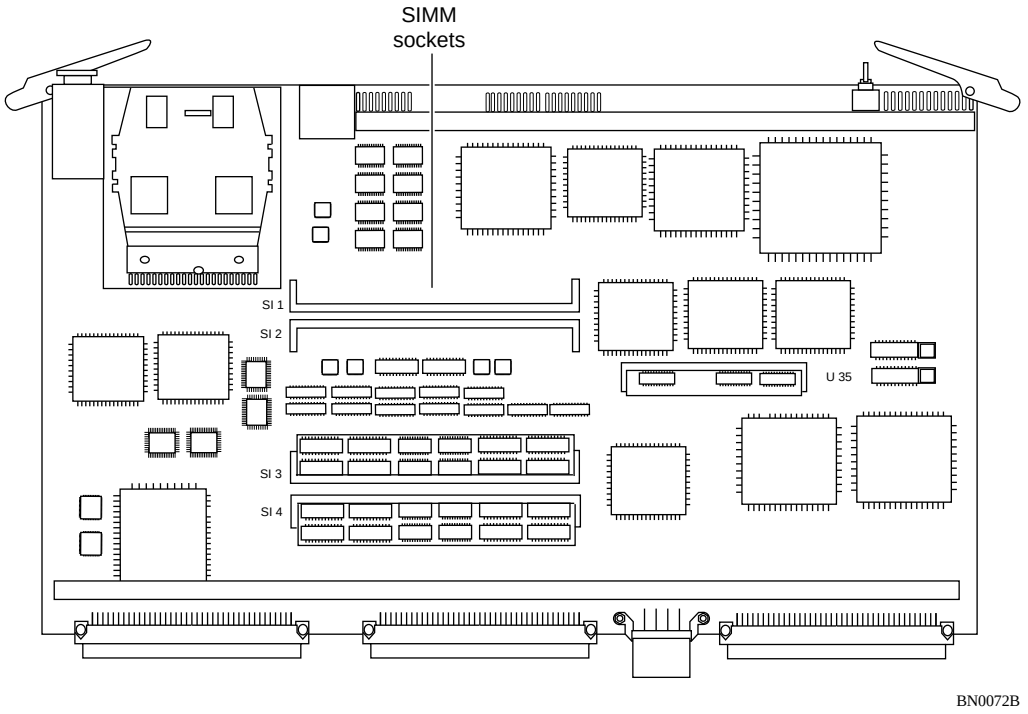

Figure 7. Location of SIMM Sockets on FRE-2 Processor Module

Upgrading from 8 MB to 16 MB

If you are upgrading a FRE-2 processor module from 8 MB to 16 MB, your upgrade kit contains two identical 72-pin SIMMs.

To upgrade the FRE-2 processor module to 16 MB:

1. **Using Figure 7 as a reference, locate SIMM sockets SI 1 and SI 2 on your FRE-2 processor module.**

   Sockets SI 1 and SI 2 should be empty.

2. **Holding one of the new SIMMs by its edges, turn it so the keyed (notched) side faces the center of socket SI 1 (Figure 8).**

3. **Insert the SIMM into the socket at an angle of about 30 degrees from the vertical.**

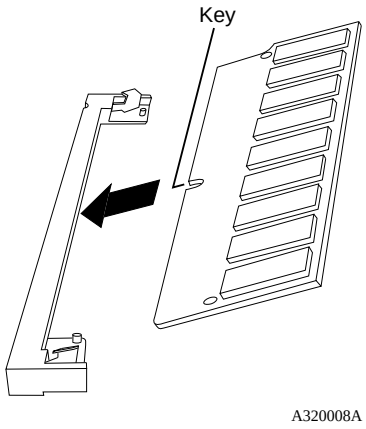

Figure 8. Inserting a SIMM into a Socket

4. **Gently push down on the module so that the retainers grasp the SIMM, locking it into place (Figure 9).**

   When the SIMM is properly inserted, the two tiny vertical black poles on the SIMM socket should line up with the two holes in the SIMM.

5. **Repeat Steps 2 through 4 to install the other SIMM in socket SI 2.**

When you are finished, sockets SI 1, SI 2, SI 3, SI 4, and U85 are all populated. Proceed to “Attaching the Upgrade Label.”

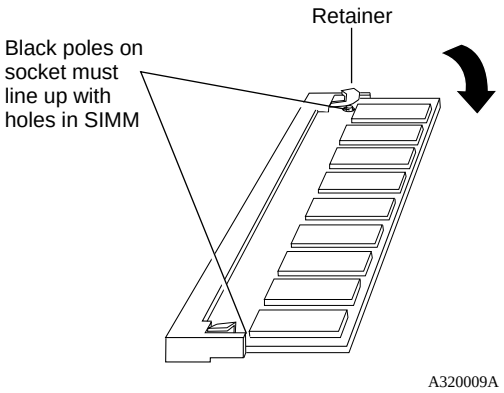

Figure 9. Locking a SIMM into Place

Upgrading from 8 MB or 16 MB to 32 MB

If you are upgrading a FRE-2 or FRE-2/060 processor module from 8 or 16 MB to 32 MB, your upgrade kit contains two identical 72-pin SIMMs and one 30-pin SIMM.

To upgrade the FRE-2 processor module to 32 MB:

1. **Using Figure 7 as a reference, locate SIMM sockets SI 1, SI 2, SI 3, SI 4, and U85 on your FRE-2 processor module.**

   Depending on the current configuration, there will be SIMMs populating some, or all, of these sockets.

2. **To remove any SIMMs currently populating sockets SI 1, SI 2, SI 3, SI 4, or U85:**

   a. **Pull back on the retainers grasping the edges of the SIMM to release it.**

   b. **Gently lift up and pull out the SIMM.**

3. **Holding one of the new 72-pin SIMMs by its edges, turn it so the keyed (notched) side faces the center of socket SI 3 (refer to Figure 8).**

4. **Insert the SIMM into the socket at an angle of about 30 degrees from the vertical.**

5. **Gently push down on the module so that the retainers grasp the SIMM, locking it into place (refer to Figure 9).**

   When the SIMM is properly inserted, the two tiny vertical black poles on the SIMM socket should line up with the two holes in the SIMM.

6. **Repeat Steps 3 through 5 to install the other 72-pin SIMM in socket SI 4.**

7. **Install the 30-pin SIMM in socket U85, using the procedure described in Steps 3 through 5.**

When you are finished, sockets SI 3, SI 4, and U85 are populated. Sockets SI 1 and SI 2 should be empty. Proceed to "Attaching the Upgrade Label."

Upgrading from 16 MB to 64 MB (FRE-2/060 Only)

If you are upgrading a FRE-2/060 processor module from 16 MB to 64 MB, your upgrade kit contains four identical 72-pin SIMMs and one 30-pin SIMM.

To upgrade the FRE-2/060 processor module to 64 MB:

1. **Using Figure 7 as a reference, locate SIMM sockets SI 1, SI 2, SI 3, SI 4, and U85 on your FRE-2 processor module.**

   Depending on the current configuration, there will be SIMMs populating some, or all, of these sockets.

2. **Remove any SIMMs currently populating sockets SI 1, SI 2, SI 3, SI 4, or U85:**

   a. **Pull back on the retainers grasping the edges of the SIMM to release it.**

   b. **Gently lift up and pull out the SIMM.**

3. **Holding one of the new 72-pin SIMMs by its edges, turn it so the keyed (notched) side faces the center of socket SI 3 (refer to Figure 8).**

4. **Insert the SIMM into the socket at an angle of about 30 degrees from the vertical.**

5. **Gently push down on the module so that the retainers grasp the SIMM, locking it into place (refer to Figure 9).**

   When the SIMM is properly inserted, the two tiny vertical black poles on the SIMM socket should line up with the two holes in the SIMM.

6. **Repeat Steps 3 through 5 to install the other 72-pin SIMMs in sockets SI 1, SI 2, and SI 4**.
7. **Install the 30-pin SIMM in socket U85, using the same installation method described in Steps 3 through 5.**

When you are finished, sockets SI 1 through SI 4 and socket U85 are populated. Proceed to "Attaching the Upgrade Label."

Upgrading from 32 MB to 64 MB (FRE-2/060 Only)

If you are upgrading a FRE-2/060 processor module from 32 MB to 64 MB, your upgrade kit contains two identical 72-pin SIMMs.

To upgrade the FRE-2/060 processor module to 64 MB:

1. **Using Figure 7 as a reference, locate SIMM sockets SI 1 and SI 2 on your FRE-2 processor module.**

   Sockets SI 1 and SI 2 should be empty.
2. **Holding one of the new SIMMs by its edges, turn it so the keyed (notched) side faces the center of socket SI 1 (refer to Figure 8).**
3. **Insert the SIMM into the socket at an angle of about 30 degrees from the vertical.**
4. **Gently push down on the module so that the retainers grasp the SIMM, locking it into place (refer to Figure 9).**

   When the SIMM is properly inserted, the two tiny vertical black poles on the SIMM socket should line up with the two holes in the SIMM.
5. **Repeat Steps 2 through 4 to install the other SIMM in socket SI 2.**

When you are finished, sockets SI 1, SI 2, SI 3, SI 4, and U85 are all populated. Proceed to "Attaching the Upgrade Label."

Attaching the Upgrade Label

Your upgrade kit comes with three labels: 16MB Upgrade, 32MB Upgrade, and 64MB Upgrade, Before you reinstall the FRE-2 processor module in the router, apply the appropriate label to the FRE-2 processor module extractor that does not already have a label on it. Be sure to attach the label that shows the amount of memory you now have on your FRE-2 processor module. To apply the label, remove it from the paper backing and press it into place.

Reinstalling the FRE-2 Processor Module

After you upgrade the FRE-2 processor module, reinstall it in the router's slot as follows:

1. **Holding the board extractors on the FRE-2 processor module open, slide the FRE-2 processor module into the card guide.**

   You cannot install the FRE-2 processor module in Slot 1 of the BLN® or BLN-2 router, or in Slot 7 of the BCN router. These slots are reserved for a system resource module.

2. **Push the board forward gently; ensure that the connector in the middle engages.**
3. **Push the extractors forward to lock the board in place.**

Note: Slide the board out and repeat Steps 1 through 3 if the extractors do not lock into place easily.

When you insert a FRE-2 processor module into a slot and the router determines that power is stable for the slot, the FRE-2 processor module automatically resets as follows:

1. It executes the diagnostics image resident on the onboard Flash memory.
2. It completes the boot process.

Reassembling the Router

After you reinstall the FRE-2 processor module, reassemble the router as follows:

1. **To reassemble a BLN or BLN-2 router, slide the top of the board retainer bracket into its designated ridge and align the bottom of the bracket with the screw hole at the bottom of the chassis (refer to Figure 6). (To reassemble a BCN router, skip to Step 3.)**
2. **Use a Phillips screwdriver to secure the board retainer bracket to the chassis.**
3. **Disconnect the wrist strap from the chassis.**
4. **Replace the EMC shield as follows:**
   a. **Position the EMC shield in front of the chassis.**
   b. **Tighten the captive thumbscrews that fasten the EMC shield to the chassis.**
5. **Insert the wrist strap into its package at the back of the front bezel.**
6. **Replace the front bezel as follows:**
   a. **Align the mounting retainers on the inside of the bezel with the holes on the front of the EMC shield.**
   b. **Push the sides of the bezel into place.**

Once the front bezel is in place, the FRE-2 processor module upgrade is complete.